

109,735

PATENT

SPECIFICATION



*Application Date, Feb. 20, 1917. No. 2472/17.*

*Complete Left, June 29, 1917.*

*Complete Accepted, Sept. 27, 1917.*

PROVISIONAL SPECIFICATION.

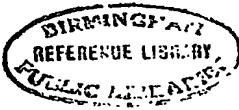
**Pictures to give Motion Effect when Viewed from a Moving Point of View.**

I, THOMAS ALBERT BRIGGS CARVER, of 9, Springfield Road, Dalmarnock, Glasgow, Civil Engineer, do hereby declare the nature of this invention to be as follows:—

My invention relates to means whereby an effect of movement can be obtained 5 in a picture, for use as an advertising sign or other visual indicator, when seen from a moving point of view. To carry my invention into effect I first determine the number of phases through which I may chose the picture to pass to produce the effect of movement required. Assuming for example, that the movement is to be composed of three phases, I first construct a screen which 10 obscures all of the picture except vertical sections at equal distances from right to left and of a breadth equal to half the breadth of the obscured portion. As an example, if the vertical sections of the picture to be viewed are to be one centimetre broad then the screen will be composed of vertical obscuring bands of a breadth of two centimetres set from left to right across the picture at a 15 centre to centre distance of three centimetres. To construct the picture itself, I then take a picture of the object drawn in each of three phases which would go to compose a uniform movement and I cut the picture of each phase so as to leave only vertical bands one centimetre wide and at a centre to centre distance of three centimetres across the picture from left to right. Taking the 20 first phase, I mount these vertical sections on a support placed at a short distance behind the screen in such a way that when viewed from a distance through the screen the vertical sections of the picture are seen to completely fill the gaps between the vertical bands of the screen and give an effect approximating to the complete picture of phase 1. I then mount the vertical sections of phase 2 25 on the same support but each vertical section corresponding to the vertical section of phase 1 at a distance to the left, say, of one centimetre from the corresponding section of phase 1, so that when the view point is correctly changed the approximately complete picture of phase 2 will be seen through the gaps between the bands of the screen as from the first point of view the 30 complete picture was seen of phase 1. I perform exactly the same operation with the picture of phase 3, so that from a certain correct third point of view a complete picture of phase 3 will be seen through the gaps of the screen. When the change of the point of view is of a proper rate the quick succession 35 to view of the three phases gives the effect of movement. While I have, for example, assumed that the picture may be divided into three phases, other numbers of phases may be employed, but the width of the gap between the

[Price 6/-.]

BEST AVAILABLE COPY



obscuring portions of the screen should always be proportional to the reciprocal of the number of phases, subject however to the following correction. As the method entails a distance between the screen and the picture behind it, when the picture is seen through the screen from a distant point of view the portions of the picture seen will be wider from left to right than the gaps between the obscuring portions of the screen on account of the angle between lines drawn from the eye and the two ends from left to right of the picture. It is easy to give effect to this correction when all the factors are known, that is, width of gap, distance between view point and screen, and distance between screen and picture, because the width of the vertical bands of the picture should be greater than the gaps between the obscuring portions of the screen in the same ratio as the distance between the view point and the picture is greater than the distance between the view point and the screen, the same of course applying to the centre to centre distances of the vertical portions of the picture. In the construction of an apparatus where the factors are known this correction can be made, but to give effect approximately to this correction within reasonable limits in cases where the factors may not be exactly known beforehand I construct the screen so that the vertical obscuring bands are not fixed but are adjustable by connecting them with links, for example, on the principle of the parallel rule. I may also construct the picture in the same way, the object in both cases of course being to bring the vertical portions of each phase of the picture into correct register with the gaps between the obscuring portions of the screen when viewed from the distance which may be chosen.

Dated this 19th day of February, 1917.

THOMAS A. B. CARVER.

10

15

20

25

25

#### COMPLETE SPECIFICATION.

#### Pictures to give Motion Effect when Viewed from a Moving Point of View.

I, THOMAS ALBERT BRIGGS CARVER, of 9, Springfield Road, Dalmarnock, Glasgow, Civil Engineer, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

My invention relates to the production, for advertising, amusement or visually indicating purposes, of pictures, designs or the like, having motion effects when viewed by an observer from a relatively movable point of view, and to apparatus employed therefor and of the kind consisting of a grating or screen having alternate opaque bands or parts and clear spaces or open gaps and arranged in front of a support carrying a picture, design or the like. My invention consists in an improved method and apparatus, the object being to endow the viewed pictures with more clearness and a greater measure of reality than hitherto.

To carry my invention into effect, I first select a picture or design for use and determine the number of phases through which the picture is to pass to produce an effect of movement, the number of phases being a chosen compromise between that giving the greatest amount of the picture seen at one time, and that giving the nearest effect of continuity of movement. I then construct a screen in a way to comprise a number of vertical obscuring bands with intervening open spaces or gaps, each gap being of a breadth that is a fraction of the centre to centre distance of the bands, the said fraction being proportional to the reciprocal of the selected number of phases. I next draw the picture or

30

35

40

45

50

design in the selected number of phases or positions and cut each of the pictures so drawn so as to leave in each only a set or series of vertical strips each approximately as wide as a gap in the screen. The sets of vertical strips I mount on a support and, finally, I place the screen at an appropriate distance from the picture strips and between it and the point of view. Thereafter during a relative movement between the point of view and the picture strips in a direction transversely of the face of the screen, and while the screen and the series of picture strips remain relatively stationary, the selected picture or design will appear to an observer to have moving effect or animation.

10. I will further describe my invention with reference to the accompanying drawings and as applied to the movement of the simple geometric design shown therein, assuming, for example, that the movement is to be composed of three phases.

15. In the drawings, Fig. 1 is an elevational view of the geometrical design just referred to; Fig. 2 is a like view of the design drawn in the first phase or position, the screen above alluded to being placed in front of and at a distance from it. Only strips of the design appear in the fig., the strips being constituted by parts of it that are seen through the gaps of the screen from a point of view in front of the screen; Fig. 3 is a like view of the design and screen, the design being drawn in or turned into the second phase or position, only those parts or strips of the design appearing as are seen from a second point of view in front of the screen; Fig. 4 is a like view of the design and screen, the design being turned further round or drawn in the third phase or position, only those parts or strips of the design appearing as are seen from a third point of view in front of the screen; Fig. 5 is a picture made up of the several sets of strips of the design appearing in Figs. 2, 3 and 4, the strips of one set being displaced laterally with respect to the strips of another set by the width of a gap on the screen; and Fig. 6 is a part plan showing the relative positions of the picture, the screen and a series of points of view according to one arrangement of the apparatus.

Having drawn the figure or design *a*, Fig. 1, in each of the three phases, Nos. 1, 2, 3, which go to compose an approximately uniform movement, I cut the picture of each phase of the design so as to leave only vertical strips or sections *a*<sup>1</sup>, *a*<sup>2</sup>, *a*<sup>3</sup> approximately as wide as the gaps *b*<sup>1</sup> between the obscuring bands *b*<sup>2</sup> of the screen *b*, Figs. 2-4, and at a centre to centre distance, approximately the same as the centre to centre distance of the obscuring bands *b*<sup>2</sup>. In the example illustrated the gaps *b*<sup>1</sup> are one-third of the centre to centre distance, or half the breadth, of the bands *b*<sup>2</sup>. Taking the first phase, or phase I, Fig. 2, I mount the vertical sections *a*<sup>1</sup> thereof on a support *c*, Fig. 6, placed at a short distance behind the screen *b* in such a way that when viewed through the screen from a distance, for instance position A, Fig. 6, the vertical sections *a*<sup>1</sup> are seen to completely fill the gaps *b*<sup>1</sup> between the vertical bands *b*<sup>2</sup> of the screen and give an effect approximating to the complete picture of phase I shown in Fig. 3. I then mount the vertical sections *a*<sup>2</sup> of phase II on the same support, but each arranged with respect to sections *a*<sup>1</sup> of phase I at a distance to the left approximately equal to the width of a gap *b*<sup>1</sup> in the screen, as shown in Fig. 5, so that when the view point is correctly changed, say from position A to position B, the approximately complete picture of phase II will be seen through the gaps between the bands of the screen, as shown in Fig. 3, just as from the first point of view A the approximately complete picture was seen in phase I. Thus from the first point of view, A, Fig. 6, the vertical sections *a*<sup>1</sup> of phase I are seen through the gaps of the screen *b*, and when the view point is changed to B, the vertical sections *a*<sup>2</sup> of phase II are seen through the gaps in the screen.

55. I perform exactly the same operation with the picture of phase III, so that from a third point of view C an approximately complete picture in phase III, as shown in Fig. 4, will be seen through the gaps of the screen. When the

change of the point of view is of a proper rate the quick succession to view of the picture in its three phases gives the effect of movement.

While I have, for example, assumed that the picture may be divided into three phases, other numbers of phases may be employed, but the width of the gap between the obscuring portions of the screen should always be proportional to the reciprocal of the number of phases, subject, however, to the following correction. As the method entails placing the picture at a distance behind the screen, the picture when seen through the screen should be wider from left to right than the gaps  $b^1$  between the obscuring portions  $b^2$  of the screen  $b$ , on account of the lines drawn from the eye to the two ends from left to right of the picture including an angle between them. It is easy to give effect to this correction when all the factors are known, that is, when the width of a gap  $b^1$ , the distance between the view point and the screen  $b$ , and the distance between screen and picture are known, because the width of the vertical sections or strips of the picture should be greater than the gaps between the obscuring portions or bands of the screen in the same ratio as the distance between the view point and the screen is greater than the distance between the view point and the screen, the same of course applying to the centre to centre distances of the vertical strips or portions of the picture.

In the construction of an apparatus where the factors are known, this correction can be made, but to give effect approximately to this correction within reasonable limits, in cases where the factors may not be exactly known beforehand, I can construct the screen so that the vertical obscuring bands are not fixed, but are adjustable by connecting them with links, for example, on the principle of the parallel rule, whereby the bands can be spaced nearer or further apart. I may also construct the picture in the same way, the object in both cases of course being to bring the vertical portions of each phase of the picture into correct register with the gaps between the obscuring portions of the screen when viewed from the chosen distance.

It is obvious that the same effect of movement, as described, will be obtained when the complete apparatus is mounted on a moving platform or object while the point of view remains stationary, producing a relative movement of the point of view.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. An improved method of producing a picture or design having an effect of movement when seen from a relatively movable point of view, which consists in (1) preparing a predetermined number of copies of the picture or design arranged in a corresponding number of positions or phases, (2) cutting each of the copies of the picture so as to leave in each a set of vertical strips thereof, (3) mounting the sets of strips on a suitable support and (4) placing at a distance from the strip-carrying support, between it and the point of view, a screen comprising a number of vertical obscuring bands equally wide and equally spaced apart, each space or gap between adjacent bands being proportional to the reciprocal of the number of phases, the said strips being not less in width than that of the said gaps and at a centre to centre distance not less than the centre to centre distance of the said obscuring bands, and the sets of strips being mounted on the support in such a manner that the strips of one set are laterally displaced relatively to the strips of another set.

2. In the method claimed in Claim 1, making the width of the vertical strips of a picture greater than that of the gaps of the screen in the same ratio as the distance between the view point and the picture is greater than the distance between the view point and the screen.

3. Apparatus for carrying out the method claimed in Claim 1 or 2, comprising, in combination with a support carrying the picture strips or design, a

screen comprising a number of obscuring bands equally wide and equally spaced apart, each space or gap between adjacent bands being proportional to the reciprocal of the number of phases, and the screen arranged at a distance in front of the picture strips and in stationary relation therewith in the containing planes, substantially as described.

5. In apparatus as claimed in Claim 3, means whereby the distance between the picture strips and the screen can be adjusted.

10. In apparatus as claimed in Claim 3 or 4, means whereby the obscuring bands of the screen can be spaced nearer together or further apart as and for the purpose described.

15. In apparatus as claimed in Claim 3, 4 or 5, means whereby the picture strips in any set can be spaced nearer together or further apart as and for the purpose described.

7. Apparatus as claimed in any of the Claims 3—6, which is mounted on a moving platform or carrier.

Dated this 29th day of June, 1917.

ABEL & LMRAY,  
Bank Chambers, Southampton Buildings, London, W.C.,  
Agents for the Applicant.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcolmson, Ltd.—1917.

BEST AVAILABLE COPY



Fig. 1.

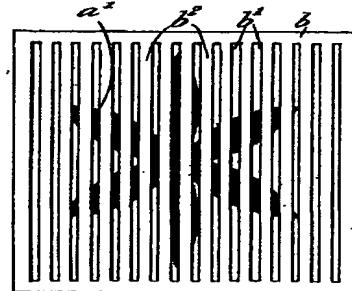
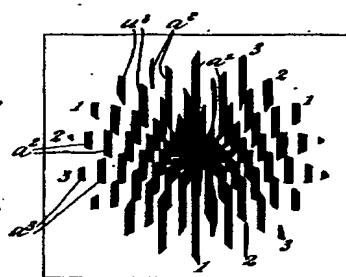


Fig. 2.

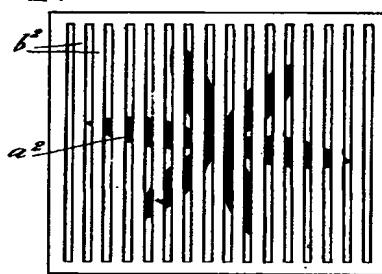


Fig. 3.

Fig. 5.

Fig. 6.

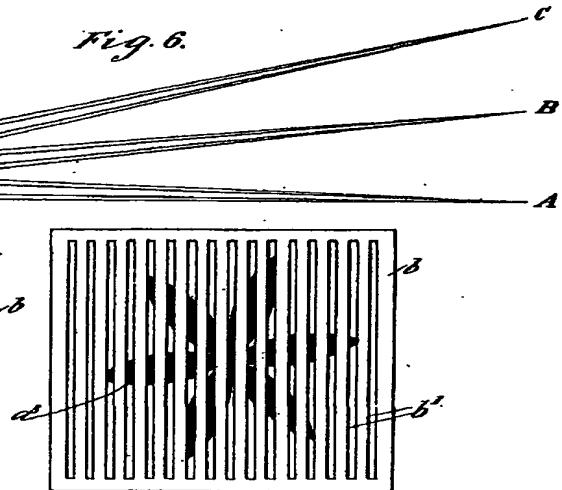


Fig. 4.



Nettoy & Sons, Photo-Lab

BEST AVAILABLE COPY

[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 1.

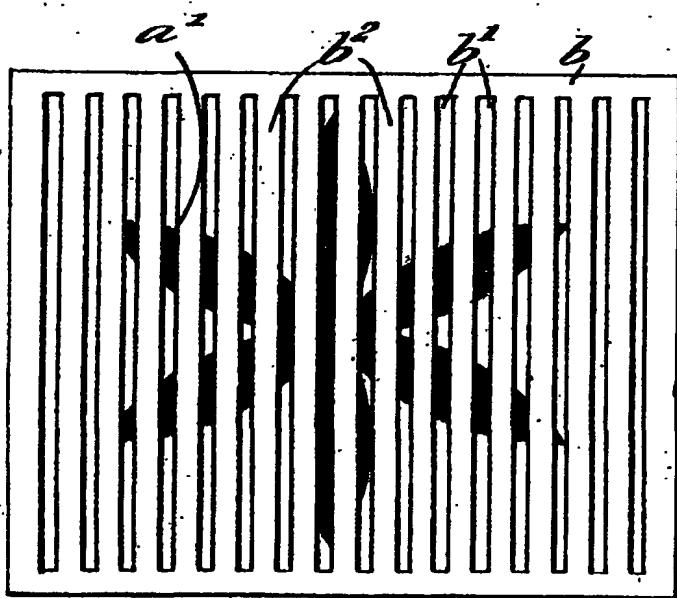
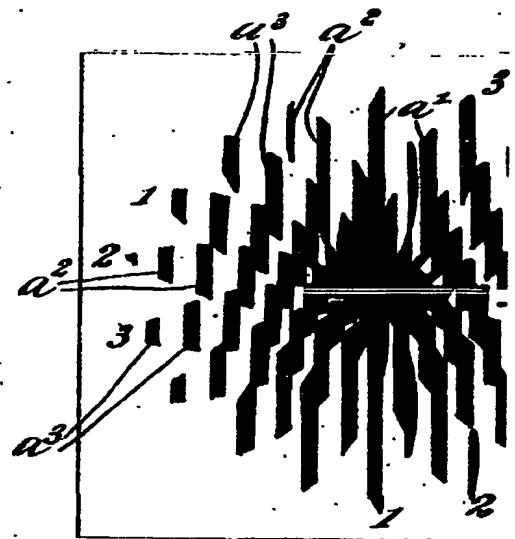
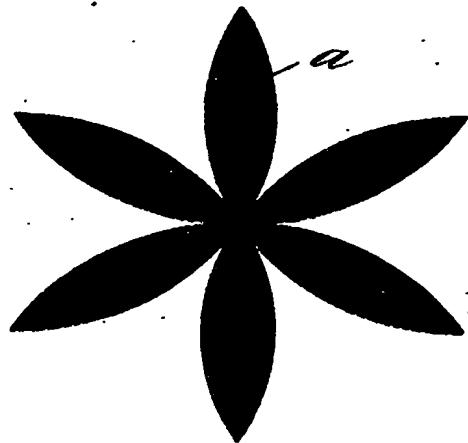


Fig. 2.

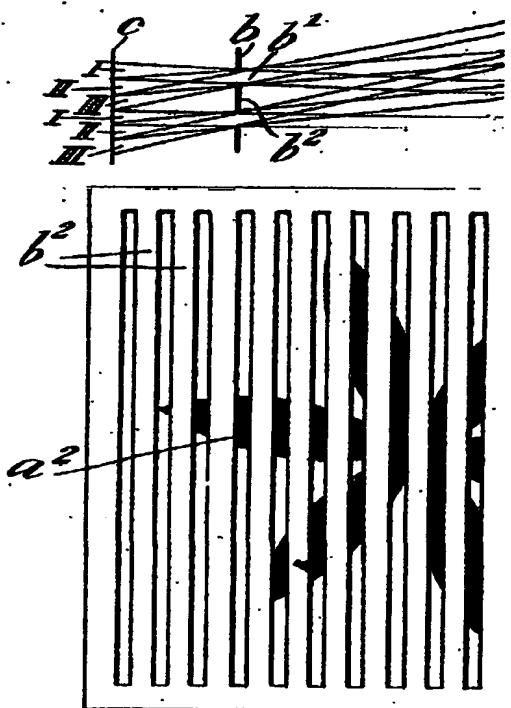


Fig.

Fig. 5.

Fig. 6.

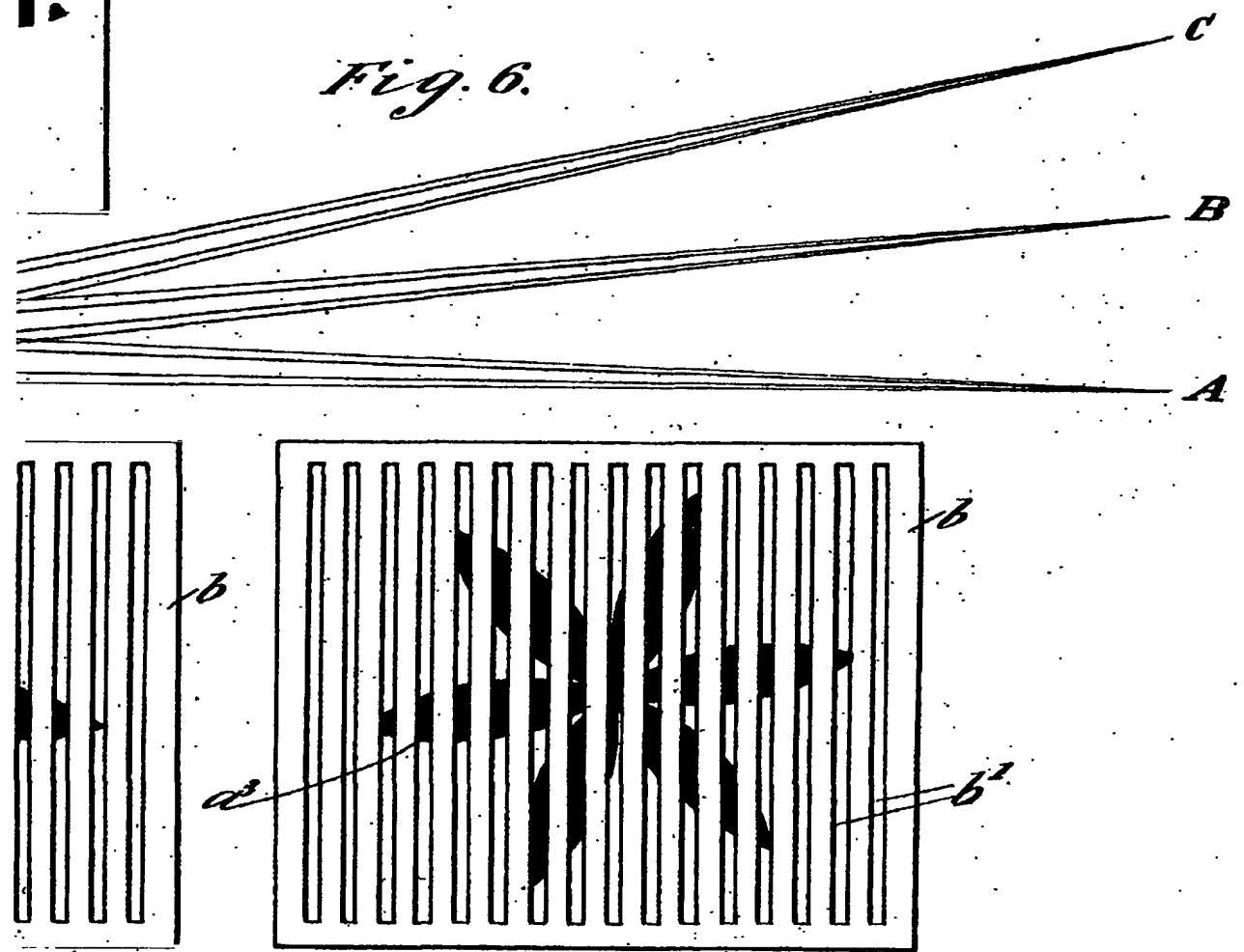


Fig. 4.

